

Product designation		11.0	16.0	20.0
Technical data				
Rated output - electrical ⁽¹⁾	kW _{el}	11,0	16,0	20,0
Rated output - thermal ⁽²⁾	kW _{th}	25,3	37,9	45,8
Power modulation - electrical	kW _{el}	7,5 - 11,0	9,5 - 16,0	10,7 - 20,0
Power modulation - thermal	kW _{th}	20,6 - 25,3	26,4 - 37,9	29,1 - 45,8
Energy input	kWh _{HI}	34,38	49,86	60,24
Liquefied Petroleum gas input	kg/h	2,67	3,87	4,68
Liquefied Petroleum gas input	l/h	4,95	7,17	8,67
CHP coefficient		0,43	0,42	0,44
f Primary energy factor ⁽³⁾		0,279	0,266	0,224
PES	%	33,3	34,5	35,6
ErP energy efficiency label ⁽⁴⁾		A++	A++	A++
Sound pressure level L _{pA} ⁽⁵⁾	dB(A)	55	55	58
Sound power level L _{WA}	dB(A)	70	70	73
Maintenance interval	op. hrs.	10.000	6.000	6.000
Efficiency ratios				
Electrical efficiency ratio η_{el}	%	32,0	32,1	33,2
Thermal efficiency ratio η_{th}	%	73,5	75,9	76,0
Total efficiency ratio η_{total}	%	105,5	108,0	109,2
Heat extraction				
Flow temperature ± 5 °C	°C	80	80	80
Return flow temperature ± 5 °C	°C	25-65	25-65	25-65
min./max. ambient temperature	°C	5/30	5/30	5/30
Pressure rating - water side	PN	3	3	3
Electrical energy generation				
Nominal voltage	V	400	400	400
Frequency	Hz	50	50	50
Nominal effective power P _{nG}	kW _{el}	11	16	20
Apparent power S _{E max}	kVA	14,1	20,5	25,6
Nominal voltage U _{nG}	V	400	400	400
Frequency	Hz	50	50	50
Cos ϕ uncompensated		0,78	0,78	0,78
Reactive power compensation ⁽⁶⁾	kVar	8,29	8,75	8,75
Number of steps		1	1	1
Degree of choking or resonance frequency		-	-	-
Cos ϕ acc. to VDE-AR-N 4105 quadrants II, III ⁽⁶⁾		0,95	0,95	0,95
Rated alternating current I _r	A	20,4	29,6	37,0
Rated alternating current I _r cos ϕ 1	A	15,9	23,1	28,9
Rated apparent power S _{rE}	kVA	14,1	20,5	25,6
Short-circuit alternating current Alternator I _k "	A	156	156	156
Grid short circuit power with U _{nG} S _k "	kVA	108,1	108,1	108,1
Start-up current I _k approx.	A	59	59	59
Motor				
Motor manufacturer		Toyota	Toyota	Toyota
Number of cylinders		4	4	4
Displacement	l	2,2	2,2	2,2
Air-fuel ratio λ		1,6	1,0	1,0
Engine oil - RMB/ENGINE Oil	l	55	55	55

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Generator			
Generator manufacturer	EMOD	EMOD	EMOD
Generator type	asynchron	asynchron	asynchron
Motor start-up	provided	provided	provided
Speed	1.540	1.540	1.540
Supply and exhaust air			
Combustion air requirement	70,25	63,69	76,95
Module ventilation flow rate	100,00	100,00	100,00
Total air requirement of module	170,25	163,69	176,95
Permissible counter-pressure of exhaust air system max. ⁽⁷⁾	150,00	150,00	150,00
min./max. intake air temperature	5/30	5/30	5/30
Min. cross section without hydraulic resistance	300	350	350
Flue gas			
Flue gas temperature ⁽⁸⁾ / max.	50 / < 110	50 / < 110	50 / < 110
Flue gas mass flow rate - damp	74	67	81
Flue gas volume flow - dry	60	54	66
Delivery pressure flue gas max.	500	500	500
Delivery pressure flue gas cascades max.	500	500	500
Delivery pressure max. for flue gas and exhaust air combination	150	150	150
Emissions Nox	< 240	< 240	< 240
Dimensions & weight			
Dimensions of module L x W x H	1.464x687x1.236	1.464x687x1.236	1.464x687x1.236
Weight approx. (including operating resources)	719	719	719
ErP-Label			
ErP energy efficiency label ⁽⁴⁾	A++	A++	A++
ErP energy input ⁽⁴⁾	38,16	55,34	66,87
ErP efficiency ratio - electrical $\eta_{el,HS}$ ⁽⁴⁾	28,8	28,9	29,9
ErP efficiency ratio - thermal $\eta_{th,HS}$ ⁽⁴⁾	66,2	68,4	68,5
ErP efficiency ratio - total $\eta_{total,HS}$ ⁽⁴⁾	95,0	97,3	98,4
Room controller category ⁽⁴⁾	2	2	2
$P_{designh}$ ⁽⁴⁾	9,8	14,7	17,7
Q_{HE} ⁽⁴⁾	14.243	21.275	24.812
P_{SB} electrical power requirement - standby ⁽⁴⁾	0,05	0,05	0,05
Electrical power requirement - partial load ⁽⁴⁾	0,31	0,47	0,70
$P_{el,max}$ Electrical power requirement - full load ⁽⁴⁾	0,31	0,47	0,70
P_{stby_CHP} Thermal standing losses ⁽⁴⁾	0,36	0,36	0,36
Electrical power requirement - standby ⁽⁴⁾	0,05	0,05	0,05
$\eta_S = \eta_{son} - \Sigma(F1-F5)$ ⁽⁴⁾	142,1	142,5	147,5
Net output - electrical	10,69	15,53	19,30

- 1) Performance data in accordance with ISO 3046/I-2002, tolerance 5%
- 2) Thermal performance data tolerance 8%
- 3) f_{pe} -current = 2.8 displacement mix per DIN V 1859, DIN V 4701-10, GEG (attachment 4 to § 22 section 1) valid from 11.2020
- 4) In accordance with EU Regulation 811/2013; 813/2013
- 5) Test bench measurement at 1 m interval in front of the CHP
- 6) Only when using the optional compensation (integrated in neoTower® 2.0, 3.3 and 4.0 / not required for neoTower® 50.0)
- 7) Exhaust air (without flue gas) does not have to be extracted "via the roof"
- 8) At a return temperature of 35 ° C and optimum operating conditions, tolerance 5%

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Control cabinet	Fully equipped for seamless CHP unit operation with all necessary measurement and control equipment in bivalent operation. Dimensions control cabinet 600x600x200 mm; Approx. weight: 30-33 kg Connection cable CHP control cabinet standard 3m
Electrical connections	Supply line to control cabinet: 5x10mm ² Cu up to max. 50m (fuse 50 A slow blow) max. terminal area 16mm ²
	Temperature sensor cable: min. 2-08 JY(ST)Y up to 15 m length (2x1,5 mm ² up to 40 m length)
	Control cables pump: 3x1,5 mm ² ; RJ45 Patch cable in CHP connector
Reactive current compensation	Fixed compensation without reactors (detuned)
	Operating voltage: 230 / 400 Volt, 50 Hz
	Integrated capacitor contactor
	Discharging of approx 40 seconds must be considered
	Limiting temperature -10°C up to +35°C (average 24 h) +40°C (short-term max.)
Gas pressure [mbar / hPa]	Steel housing 400x300x210mm (HxWxL)
	Gas resting pressure before gas regulator: 20 - 50 (for NG and LPG) Flow pressure ≥ 18 (for NG and LNG)
Regulations and standards	Complies with the pertinent EU Directives for CE certification
Connections	Gas: 1/2" internal thread
	Heating supply line: 1" ball valve / PN 3.0
	Heating return line: 1" ball valve / PN 3.0
	Flue gas: DN80
	Exhaust air: DN100; accepted back pressure to be considered!
	Note: It is important to ensure that all terminals are connected via a flexible connection, in order to ensure vibration isolation.
Method of operation	Residual pressure head secondary pump 0,7m
	Mains parallel without emergency power, heat operated
	Use of electricity: Own requirement and infeed into the grid of the energy supply company, optional electricity-optimised modulation
Indicators and switches/buttons	Heat usage automatically regulated in monovalent or bivalent operation with buffer tank; optionally heat-optimised modulation
	Operation of the internal control and monitoring programs via central control unit (touchscreen for quick access to important functions)
	Back-lit graphical colour display with visualised system diagram and indicators for: temperature memory, motor, return line, hot water, interior, oil, flue gas, indicator for current power, water pressure, operation hours, generated energy, maintenance instructions and error notifications
RMB/Report	Switches/buttons: master switch, Emergency stop, Electric vehicle (Efz) charging data button, maintenance button
	Global live data tracking visualised in installation diagram, individual password protection, data logging with daily, weekly, monthly and annual report in graphical format, remote maintenance, remote monitoring, evaluation and reporting
Water quality	Motor circuit: 40% glycol, 60% water per VDI Regulation 2035. Operational pressure warm: 2.0 bar. Operational pressure cold: 1.8 bar. Primary pressure expansion vessel cold: 0.3 bar. Heating circuit ("secondary circuit"): free from mechanical impurities and as a minimum in accordance with quality requirements of the Group 2, VDI Regulation 2035 Conductivity < 100µS/cm Water hardness < 1° dH 8.2 > pH-Wert < 9 Deviations cause severe damages!

Deviating values depending on environmental and operating conditions.

Technical modification, design deviation and errors excepted.